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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHU, KIM KWOK

ART UNIT PAPER NUMBER

2627

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/021,000

Applicant(s)

TAKESHITA, NOBUO

Examiner

Kim-Kwok CHU

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 9/20/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 13-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/26/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Remarks***

1. Applicant's Amendment filed on September 20, 2006 has been fully considered. The rewritten of Claims 13, 15 and 18 in independent form are now rejected with the prior art of Wakabayashi et al. in view of Oinoue et al. because a further consideration of Applicant's claimed limitations are disclosed in the cited prior art.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

3. Claims 13-18 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Wakabayashi et al. (U.S. Patent 5,319,497) in view of Oinoue et al. (U.S. Patent 6,044,048).

4. Wakabayashi teaches an optical head very similar to that of the instant invention as recited in claims 13 and 14. For example, Wakabayashi teaches the following:

(a) With respect to claim 13, a lens holder 2 for holding the objective lens 1 (Fig. 4); the objective lens 1 being configured to bring emitted light into focus (Fig. 4); a support shaft inserted in the bearing hole of the lens holder 2, such that the support shaft is substantially parallel to an optical axis of the objective lens (Figs. 2 and 5; line 0a shows a support shaft; a bearing hole to fit a support shaft is an inherent feature in this type of lens drive device so that the lens holder 2 can be rotated; column 1, lines 25-29); an inclination drive unit (lens drive coils and magnets) configured to turn the lens holder 2 on a first axis perpendicular (horizontally, incline or slant) to the support shaft based on detected information (Figs. 4 and 5; coils and magnets generates the driving force and accelerating force which turns/rotates the lens holder 2 in the direction  $\theta$  which is perpendicular to the vertical axis 11a; detected information are focusing and tracking errors); at least part of the inclination drive unit being arranged on a second (horizontal) axis, which is substantially perpendicular to the support shaft and the first (vertical) axis (Fig. 4; magnets 3a, 3b etc. are positioned in horizontal axis); a focusing drive unit including a coil 8a, 8b wound around the support shaft, the focusing drive unit being configured to move the lens holder in a focusing direction based on the detected information (Figs. 2

and 4; column 5, lines 31-41; coils 8a and 8b form a circle around the central supporting shaft).

However, Wakabayashi does not teach the following:

(i) a light detector for receiving the light reflected from the information recording medium in response to the emitted light.

Oinoue teaches the following:

(i) a light detector 27 for receiving the light reflected from the information recording medium 11 and outputting information about inclination (servo movements) of the objective lens relative to the information recording medium 11 on the basis of the light received (Figs. 5 and 6).

An optical pickup used in an optical information read/write system requires a light detector to detect a reflected light beam. In this case, although Wakabayashi's lens drive device does not include the necessary light detector to form the optical information read/write system, it would have been obvious to one of ordinary skill in the art to add the light detector such as Oinoue's, because the light detector provides detected information reflected from an recording medium to a lens servo control device so that Wakabayashi's objective lens can be driven by the servo control device.

(b) With respect the Claim 14, the prior art of Wakabayashi further teaches a tracking drive unit 3a, 3b, at

least part of the tracking drive unit being arranged on the first axis (Figs. 4 and 5; magnets 3a and 3b arranged/surrounded on the first axis are part of the tracking drive unit).

5. Claim 15 has limitations similar to those treated in the above rejection, and is met by the references as discussed above.

6. With respect to Claims 16 and 17, Wakabayashi in view of Oinoue teach an optical head very similar to that of the instant invention as recited in Claims 13 and 14. However, Wakabayashi does not teach the following:

- (i) with respect to Claim 16, a controller having electrical connections to the inclination, tracking, and focusing drive units respectively;

- (ii) with respect to Claim 16, the controller is operable to apply a current to each electrical connection based on the detected light; and

- (iii) with respect to Claim 17, the light detector includes a 2 by 2 matrix of light receiving surfaces, each light receiving surface generating a signal based on the detected light, the controller being configured to apply the

currents to the electrical connections based on the signals from the light receiving surfaces.

Oinoue teaches the following:

(i) a controller 19 having electrical connections to the inclination, tracking, and focusing drive units respectively (Fig. 1);

(ii) the controller 19 is operable to apply a current to each electrical connection based on the detected light 20 (Fig. 1); and

(iii) the light detector 27'a includes a 2 by 2 matrix of light receiving surfaces A, B, C, D, each light receiving surface generating a signal based on the detected light, the controller being configured to apply the currents to the electrical connections based on the signals from the light receiving surfaces (Fig. 15).

An objective lens servo mechanism requires a controller to process and control the inclination, tracking and focusing of the lens. When these lens servo movements are applied to Wakabayashi's tracking and focusing coils, it would have been obvious to one of ordinary skill in the art to use a servo controller similar to Oinoue's, because the controller adjust the inclination, tracking and focusing direction of the lens holder by supplying current in form of electrical signals to respective servo motors.

Furthermore, in order to adjust the servo movements according to the lens holder positions, it would have been obvious to one of ordinary skill in the art to use a 2 by 2 matrix light receiving surfaces such as Oinoue's in Wakabayashi's lens drive device, because light receiving means detect the light beam pass through the objective lens. The detect light beam is converted to electrical signals such as tracking and focusing error to the servo controller so that servo signal in form of current is applied to the respective servo drive motors.

7. Claim 18 has limitations similar to those treated in the above rejection, and is met by the references as discussed above. Claims 18 however also recites the following limitation which is also taught by the cited prior art of Wakabayashi:

(i) with respect to Claim 18, a pair of magnets 6a, 6b mounted on the base 10, such that the magnets are arranged on the second (horizontal) axis on either side of the support axis (Fig. 4).



8. Claim 19 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Wakabayashi et al. (U.S. Patent 5,319,497) in view of Oinoue et al. (U.S. Patent 6,044,048) and Nii et al. (U.S. Patent 6,574,186).

9. With respect to Claim 19, Wakabayashi in view of Oinoue teach an optical head very similar to that of the instant invention as recited in Claim 18. However, both Wakabayashi and Oinoue do not teach the following:

(i) with respect to Claim 19, a magnetic fluid within the bearing hole.

Nii teaches the following:

(i) a magnetic fluid 5 within the bearing hole (Fig. 1; column 3, lines 54 and 55).

A rotating shaft in a bearing hole such as Wakabayashi's requires a lubricating oil to reduce the frictional force between the shaft and the hole. When there are air bubbles in the oil which affects the stability of the shaft, it would have been obvious to one of ordinary skill in the art to replace the lubricating oil in Wakabayashi's bearing hole with the magnetic fluid of Nii's, because the magnetic fluid acts as both a lubricant and a stabilizer to the rotating shaft under the surrounding magnetic fields.

***Allowable Subject Matter***

10. Claims 1-11 are allowable over prior art.

11. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claims 1 and 9, the prior art of record fails to teach or fairly suggests that the bearing hole having a diameter that increases while approaching the bearing hole's openings from the bearing hole's center.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nose et al. (5,791,785) is pertinent because Nose teaches a bearing means filled with magnetic lubricant.

13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch, can be reached on (57) 272-7589.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

Kim-Kwok CHU

*KC* 10/17/2006  
Examiner AU2627  
October 17, 2006

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